

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to electronic equipment equipped with the display and this display which have two or more functions, are in every direction and change the display direction according to the function used.

[0002]

[Description of the Prior Art] Generally, in the electronic equipment (a video camera, electronic "still" camera, etc.) which displays an image, it has the display which has the screen of the same ratio in every direction as the display of a television set etc., i.e., a rectangle, (oblong). In recent years, in such electronic equipment, the compound device equipped with a photography function and communication facility (for example, PHS:Personal Handy phone System), such as an electronic "still" camera, provides. It is carried out. In case databases, such as a dialing key, and the telephone number, the address, etc. are displayed in case the above-mentioned indicating equipment is used as a touch panel and it is used as a PHS terminal, or it is used as an electronic "still" camera, the photoed image is expressed as this compound device. Moreover, the image photoed with the electronic "still" camera can be immediately transmitted by the PHS function.

[0003]

[Problem(s) to be Solved by the Invention] By the way, by the conventional compound device mentioned above, there are some which rotate 90 degrees of sense of a device by the case where it is used as the case where it is used as an electronic "still" camera, and a transmitter. For example, in using it by making a device into a longitudinal direction (oblong) in using it as an electronic "still" camera, and using it as a transmitter, it uses it by making a device into a lengthwise direction (longwise). Therefore, in order to display the image of a display correctly, it is necessary to rotate the 90 degrees of the display directions of an image according to a use gestalt.

[0004] However, by the conventional compound device, since a display was a rectangle, when it was in every direction, the display direction was changed, it displayed and it was going to display one screen to the limit of a screen, there was a problem that the scale of a display image will change. Moreover, when the scale was made the same, there was a problem that some display images will go out depending on the display direction.

[0005] Moreover, when a longwise photographic subject tends to be stored to the limit of the framework and it is going to photo it in the conventional electronic "still" camera irrespective of a compound device, 90 degrees of bodies of a camera must be rotated. It had become the structure stabilized in a longitudinal direction, and where 90 degrees of bodies are rotated, when it grasped, stability was lost and there was a problem of becoming easy to produce blurring. Moreover, since the visual field was right and left large and it became narrow to the upper and lower sides, when rotating 90 degrees of bodies with the dependency of liquid crystal, there was a problem that how the photographic subject displayed on a display appears differed from an actual thing. Moreover, there was a problem that the tint of liquid crystal changed, by rotating 90 degrees. Furthermore, by rotating 90 degrees, it was hard coming to push the shutter

arranged in the predetermined location, and there was a problem that operability worsened.

[0006] Moreover, by the electronic equipment (an electronic "still" camera, video camera, etc.) which has the conventional photography function, when the date, current time, etc. were added in the image data currently displayed, they were always added to the location where it was decided in image data. In other words, by the electronic equipment which has the conventional photography function, since the vertical direction of a case or the vertical direction of a display was absolute, where a body is grasped depending on the standard way of having, it was added so that an alphabetic character might stand erect.

[0007] However, when a motion picture camera machine was made into length, or was turned sideways and photoed, 90 degrees also of image data will also rotate to a display (or case), when text was added by the approach mentioned above to this image data, the vertical direction of image data and the vertical direction of text were not in agreement, and there was a problem that visibility was bad.

[0008] Then, this invention aims at offering electronic equipment equipped with the display and this display which can change the display direction easily in all directions, without the scale of a display image changing or some display images going out.

[0009] Moreover, this invention aims at offering electronic equipment equipped with the display and this display which can be displayed while it can photo a longwise and oblong photographic subject with a suitable aspect ratio, without rotating a body.

[0010] Furthermore, even if this invention makes a body length and it turns it sideways, it can add text and aims at offering electronic equipment equipped with the display and this display which can improve visibility so that it may agree in the vertical direction of image data.

[0011]

[Means for Solving the Problem] For the above-mentioned purpose achievement, an aspect ratio is the display which displays an image on the viewing area of 1:n ($n > 1$), and the display by invention according to claim 1 has the aspect ratio which is about n pair n by which said viewing area is included, and is characterized by rotating said viewing area according to a use gestalt.

[0012] Moreover, said display may be prepared, for example in the compound device according to claim 2 which has two or more functions like and changes a use gestalt according to a use application as a desirable mode.

[0013] Moreover, said use gestalt may be a grasping gestalt by the user of electronic equipment according to claim 3 for whom said display was prepared like as a desirable mode, for example.

[0014] Moreover, for the above-mentioned purpose achievement, in the electronic equipment equipped with the display with which an aspect ratio displays an image on the viewing area of 1:n ($n > 1$), as for the electronic equipment by invention according to claim 4, said display has the aspect ratio which is about n pair n by which said viewing area is included, and is characterized by rotating said viewing area according to the use gestalt of the device concerned.

[0015] Moreover, the display direction of said viewing area when the display direction of said viewing area according to claim 5 when it has the 1st function and 2nd function like and said 1st function is used, and said 2nd function are being used for said electronic

equipment, for example may intersect perpendicularly as a desirable mode.

[0016] Moreover, as a desirable mode, said 1st function may be communication facility like for example, claim 6 publication, and said 2nd function may be a photography function.

[0017] Moreover, for the above-mentioned purpose achievement, it has the field of the aspect ratio of about n pair n which can be displayed, an aspect ratio sets up alternatively 1: n or the effective viewing area of $n:1$ ($n > 1$) in [which can be displayed / this] a field, and the display by invention according to claim 7 is characterized by displaying an image on this effective viewing area.

[0018] Moreover, it may consider as a desirable mode, for example, the vertical direction of the image displayed on said effective viewing area like according to claim 8 may always be fixed.

[0019] Moreover, the electronic equipment by invention according to claim 9 is characterized by providing a display means to have the field of the aspect ratio of about n pair n which can be displayed, the handler into which a use gestalt is inputted, and a display-control means for it to be based on the actuation situation of said handler, and to change the aspect ratio of the effective viewing area in [which can be displayed / said] a field for the above-mentioned purpose achievement.

[0020] Moreover, it considers as a desirable mode, for example, has a photography means according to claim 10 to photo a photographic subject like, and you may make it display the image photoed by this photography means on said effective viewing area.

[0021] Moreover, it considers as a desirable mode, for example, you may make it determined by changing the aspect ratio of an image taking-in field [in / like / in the aspect ratio of said effective viewing area / said image pick-up means], and a picture signal taking-in starting position according to claim 11.

[0022] Moreover, the electronic equipment by invention according to claim 12 for the above-mentioned purpose achievement A display means to display an image on the effective viewing area which has the viewing area of the aspect ratio of about n pair n , and has the aspect ratio of 1: n ($n > 1$) of this viewing area, An include-angle detection means to detect angle of rotation of a case, and a decision means to determine the vertical direction of said effective viewing area based on angle of rotation detected by said include-angle detection means, While displaying an image on said effective viewing area based on the vertical direction determined by text generation means to generate text, and said decision means It is characterized by providing a display-control means to display the absolute location to the displayed this image, and the text absolutely generated by said text generation means in the direction.

[0023] Moreover, it considers as a desirable mode, for example, has a photography means according to claim 13 to photo a photographic subject like, and you may make it display the image photoed by this photography means on said effective viewing area.

[0024] Moreover, the aspect ratio of said effective viewing area may be made to be determined by changing the aspect ratio and picture signal taking-in starting position of an image taking-in field according to claim 14 as a desirable mode, for example. [in / like / said image pick-up means]

[0025]

[Embodiment of the Invention] Hereafter, the gestalt of operation of this invention is explained with reference to a drawing as one example applied to the compound device of

an electronic "still" camera and a PHS terminal.

[0026] A. The block diagram 1 of the configuration (1) compound device of the 1st example A-1. 1st example is a block diagram showing the configuration of the compound device by the 1st example of this invention. The compound device is equipped with the circuit for realizing the photography function by the circuit and electronic "still" camera for realizing communication facility by PHS in drawing.

[0027] a. In an electronic "still" camera section Fig., 1 is CCD, changes into an electrical signal the quiescence image which carried out image formation through the lens which is not illustrated, and supplies it to a buffer 2. After a buffer 2 amplifies the above-mentioned quiescence video signal on predetermined level, it is supplied to the A/D-conversion section 3. After the A/D-conversion section 3 changes the above-mentioned quiescence video signal into digital data (henceforth image data), it is supplied to TG (Timing Generator; Thailand Min GU generator)4. According to this timing signal, TG4 incorporates the above-mentioned image data, and outputs it to a data bus while it generates the timing signal for controlling the drive circuit 4 which drives CCD1 and supplies this to the drive circuit 5.

[0028] Next, 6 is DRAM (dynamic memory) and is a storage which stores temporarily the image data which the above TG 4 outputs. This image data is read when photography for one screen is completed, and color data processing which separates a luminance signal and a chrominance signal is performed. Moreover, 7 is compression which performs processing which elongates the compressed image data while compressing the above-mentioned luminance signal and chrominance signal which were separated by color data processing with compression methods, such as for example, a JPEG (Joint Photographic Coding Experts Group) method. It is the /elongation section. 8 is a flash memory which stores the image data (a luminance signal and chrominance signal) by which compression was carried out [above-mentioned].

[0029] Next, 9 is **** to the luminance signal which is SG (Signal Generator; video signal generator), and was elongated by compression/elongation section 7. A number is superimposed, a synchronizing signal etc. is added, a digital video signal is created, and it outputs to VRAM (Video RAM)10 and D/A converter 11.

[0030] VRAM10 is a storage which memorizes the above-mentioned digital video signal. Moreover, D/A converter 11 is supplied to LCD (liquid crystal display)13 while it changes into an analog signal (henceforth an analog video signal) the digital video signal which the above SG9 outputs and outputs it from an outgoing end through a buffer 12.

[0031] Moreover, 14 is an I/O Port which functions as an interface which outputs and inputs the video signal changed into the serial signal, and especially, in the **** 1 example, in case the image data recorded among other devices (for example, an electronic "still" camera, a computer, etc.) is delivered and received, it is used. Actual connection is made with the communication link terminal 15 connected to this I/O Port 14 so that it may state below.

[0032] b. In the communications department Fig., 16 is the transceiver section and consists of modems which consist of the frequency conversion section which consists of a receive section and the transmitting section, and a receive section and the transmitting section. The receive section of the frequency conversion section does frequency conversion to IF (intermediate frequency) signal near a 1MHz band from a 1.9GHz band by mixing the signal which is inputted through the antenna switch which distributes

transmission/reception and which was received with Antenna ANT with the local oscillation signal of the predetermined frequency outputted from a PLL synthesizer. Moreover, by mixing the modulated wave of $\pi / 4$ shift QPSK supplied from the modem mentioned later with the local oscillation signal of the predetermined frequency outputted from a PLL synthesizer, frequency conversion of the transmitting section of the frequency conversion section is carried out to a 1.9GHz band, and it is radiated from Antenna ANT through an antenna switch. Next, the receive section of the modem mentioned above restores to the IF signal from the frequency conversion section, separates into IQ data, considers as a data stream, and sends out to the communications control section 11. Moreover, in the transmitting section of a modem, IQ data are created from the data supplied from the communications control section 17, $\pi / 4$ shift QPSK is modulated, and it sends out to the frequency-conversion section of the transceiver section 16.

[0033] Next, the communications control section 17 consists of a transmitting side and a receiving side, and performs frame synchronization and data format processing of a slot. After the above-mentioned receiving side picks out the data for one slot from the received data supplied from the modem of the transceiver section 16 to predetermined timing, extracts unique WORD (synchronizing signal) out of this data, and generates a frame alignment signal and cancels the scramble of the control data section and the voice data section etc., it sends out control data to CPU21, and sends out voice data to the speech processing section 18. Moreover, after it gives a scramble etc., it adds unique WORD etc., and the above-mentioned transmitting side creates the transmit data for one slot, inserts it in the predetermined slot in a frame to predetermined timing, and is sent out to the modem of the transceiver section 16 while it adds control data etc. to the voice data supplied from the speech processing section 18.

[0034] Next, the speech processing section 18 mentioned above consists of a speech codec and a PCM codec. The above-mentioned speech codec performs compression/elongation processing of digital data, and consists of a receiving side and a transmitting side. It elongates by decrypting the ADPCM sound signal (4 bit x8kHz=32Kbps) supplied from the communications control section 17 to a PCM sound signal (8 bit x8kHz=64Kbps), and a receiving side is outputted to a PCM codec. A transmitting side is compressed by encoding the PCM sound signal supplied from a PCM codec to an ADPCM sound signal, and is sent out to the communications control section 17. The PCM codec mentioned above performs analog-to-digital-conversion processing, a receiving side changes into an analog sound signal the PCM sound signal supplied from a speech codec by D/A conversion, and it is made to pronounce from a loudspeaker 19, and a transmitting side changes into a PCM signal the analog sound signal inputted from the microphone 20 by A/D conversion, and sends it out to a speech codec.

[0035] Next, CPU21 controls actuation of each part according to the condition of a predetermined program and the switch of the above-mentioned key input section 9. Especially, in the **** 1 example, the display direction of the viewing area in LCD13 is changed according to the injection location of the mode circuit changing switch 31 established in the key input section 24 mentioned later according to the flow chart mentioned later.

[0036] The program performed by the above CPU 21, various parameters, etc. are stored in ROM22. Moreover, the data generated with control of the above CPU 21 are stored in

RAM23, or it is used for it as working area. In addition, storage of RAM23 is held according to the power source from the dc-battery which is not illustrated. Next, when using it as a PHS terminal, while the key input section 24 functions as the numerical keypad which inputs the telephone number of a dispatch place (partner), the switch which performs on hook/OFUFUKKU, the volume switch into which a voice output is changed, etc., when using it as an electronic "still" camera, it consists of two or more keys which function as a shutter key, a playback key, an image delivery key, a switch that sets up the various set points. The condition of these keys or a switch is supplied to CPU21.

[0037] Moreover, LCD13 mentioned above consists of a liquid crystal display of an abbreviation square (1:1=n:n) with which an aspect ratio displays an image on the viewing area of 1:n (n> 1). In using the terminal concerned as an electronic "still" camera While displaying the image data after the image photoed by CCD1, and the photography stored in the flash memory 8, in using it as a PHS terminal Various data, such as a message in a dialing key, the telephone number, duration of a call, and transceiver mode, etc. display the image and the image from a partner terminal which were photoed by CCD1, in using it as a TV phone. This LCD13 serves as a touch panel, and if a dialing key, an icon, etc. which were displayed are directed with a user or the touch pen which is not illustrated (depression), a dial input and the function assigned to the icon will be performed.

[0038] (c) The appearance configuration and the use gestalt, next drawing 2 of a compound device are the perspective view showing the appearance configuration of the compound device mentioned above. In addition, the same sign is attached to the part corresponding to drawing 1 , and explanation is omitted. In drawing, 30 is a shutter key for incorporating the image photoed by CCD1, when the compound device concerned is used as an electronic "still" camera. Moreover, it is a mode circuit changing switch for switching every direction of the display screen to LCD13, and a finder, 31 widens a display screen and a finder, when illustration is made into a normal position and the mode circuit changing switch 31 concerned is thrown into the bottom, and when it supplies to the bottom, it makes a display screen and a finder longwise.

[0039] Here, drawing 3 and drawing 4 are the mimetic diagrams showing the use gestalt of a compound device. According to the use application, the compound device concerned changes a grasping gestalt so that it may be the easiest to use it for the application. For example, in using the compound device concerned as an electronic "still" camera, as shown in drawing 3 (a), it grasps so that it may become oblong. At this time, LCD13 is seen from a user and the arrow head to illustrate serves as the vertical direction. A user throws the above-mentioned mode circuit changing switch 31 into the bottom, and as shown in drawing 4 (a), he sets up the direction of the viewing area in LCD13 so that the arrow head to illustrate may serve as the vertical direction. That is, an aspect ratio displays the photoed image, the recorded image to LCD13 of n:n by the viewing area which has the aspect ratio of 1:n (n> 1). In this case, since the device is grasped so that it may become oblong, the vertical part of LCD13 turns into the part besides a viewing area, i.e., a non-display field.

[0040] On the other hand, since a loudspeaker 19 is applied to a lug and it must be made to have to bring a microphone 20 to the mouth when using it as a PHS terminal, as shown in drawing 3 (b), it grasps so that it may become longwise. What is necessary is to rotate 90 degrees to the time of electronic "still" camera use, and just to display, since the arrow

head which looks at LCD13 from a user and is illustrated at this time serves as the vertical direction. Then, a user throws the above-mentioned mode circuit changing switch 31 into the bottom, and as shown in drawing 4 (b), he sets up the direction of the viewing area in LCD13 so that the arrow head to illustrate may become in the vertical direction. That is, to the time of electronic "still" camera use, where 90 degrees of viewing areas in LCD13 are rotated, a dialing key, the telephone number, etc. are displayed. In this case, since the device is grasped so that it may become longwise, the vertical part (right and left at the time of electronic "still" camera use) of LCD13 turns into the part besides a viewing area, i.e., a non-display field.

[0041] A-2. Explain actuation of the 1st example, next actuation of the compound device by the 1st example mentioned above. In addition, ** [in / by the following explanation / a message or photography] Since it is the same as that of actuation of the usual PHS terminal or an electronic "still" camera about actuation of the section, explanation is omitted. Here, drawing 5 is a flow chart for explaining display change actuation by the compound device by **** 1 example.

[0042] First, if it judges whether the mode circuit changing switch 31 which changes the function as an electronic "still" camera and the function as a PHS terminal was operated and is not operated at step S10, it progresses to other processings. On the other hand, if the mode circuit changing switch 31 is operated, it will progress to step S12 and will judge whether it was supplied to the bottom. Here, when a user uses the compound device concerned as an electronic "still" camera, since a user throws the mode circuit changing switch 31 into the bottom, he progresses to step S14. At step S14, as shown in drawing 3 (a), where it was oblong and the device concerned is grasped, the direction of the viewing area of LCD13 is set up so that the device at present currently used as an electronic "still" camera may agree up and down, as shown in drawing 6 (a). Therefore, the upper and lower sides of LCD13 serve as a non-display field. Consequently, the image photoed by CCD1 and the image memorized by the flash memory 8 are displayed that it sees from a user and the upper and lower sides of an image (image) become right where it was oblong and the device concerned is grasped on LCD13.

[0043] On the other hand, when a user uses the compound device concerned as a PHS terminal, since a user throws the mode circuit changing switch 31 into the bottom, he progresses to step S16. At step S16, as shown in drawing 3 (b), as shown in drawing 6 (b), 90 degrees is rotated to the viewing area at the time of electronic "still" camera use, and where it was longwise and the device concerned is grasped, the direction of the viewing area of LCD13 is set up so that the device at present currently used as a PHS terminal may agree up and down. Therefore, LCD13 (as opposed to LCD at the time of electronic "still" camera use) Right and left serve as a non-display field. Consequently, the dialing key for a dial, the telephone number, various data, etc. are in the condition which was longwise and grasped the device concerned, and it is displayed on LCD13 that it sees from a user and the upper and lower sides of an image (image) become right.

[0044] Thus, since LCD13 is made into an abbreviation square and it was made to rotate 90 degrees of viewing areas of LCD13 in the **** 1 example according to the use gestalt Even if the device concerned is used by landscape orientation or a (electronic "still" camera) and the device concerned are used in the longwise direction (direction which received oblong and was rotated 90 degrees) (PHS terminal) The display direction of a viewing area can be changed easily, without rotating the special actuation 13, for

example, LCD, mechanically, or performing special processing. Moreover, by changing the display direction of a viewing area, the scale of a display image does not change or some display images do not go out.

[0045] B. Explain the 2nd example, next the 2nd example by this invention. In the **** 2 example, in case the compound device concerned is used as an electronic "still" camera (or you may be an electronic "still" camera simple substance), the technical problem of the conventional technique produced when a longwise photographic subject tends to be stored to the limit of the framework and it is going to photo it is solved.

[0046] B-1. It is as having mentioned above to change a grasping gestalt so that it may be the easiest to use the compound device of configuration this invention of the 2nd example for the application according to the use application. For example, in using the compound device concerned as an electronic "still" camera, as shown in drawing 7 (a) and (b), it grasps so that it may become oblong, and enables photography and a display by the framework oblong and longwise only with the grasping gestalt of illustration in the **** 2 example. That is, in the **** 2 example, it sees and the arrow head to illustrate always serves as the vertical direction from a user, and LCD13 is displayed while a photograph is taken so that a longwise image and an oblong image may agree in this vertical direction.

[0047] Moreover, when functioning as an electronic "still" camera, the mode circuit changing switch 31 is the exposure field and picture signal of CCD1. It functions as a circuit changing switch for changing an incorporation starting position. When you want to store a photographic subject as an oblong image (for example, when the photographic subject has spread horizontally), specifically As the mode circuit changing switch 31 is thrown into the bottom and it is shown in drawing 7 (a), while making the exposure field of CCD1 into the aspect ratio of 1:n (n> 1) At least initiation is about the incorporation starting position of a picture signal. By considering as ** SP 1, an aspect ratio becomes possible [displaying the image photoed to the effective viewing area which has the aspect ratio of 1:n (n> 1), the recorded image] to LCD13 of n:n. In this case, the vertical part of LCD13 turns into the part besides a viewing area, i.e., a non-display field.

[0048] Similarly, when you want to store a photographic subject as a longwise image (for example, when a photographic subject is perpendicularly long) It is as if the exposure field of CCD1 is made into the aspect ratio of n:1 (n> 1) as the above-mentioned mode circuit changing switch 31 is thrown into the bottom and it is shown in drawing 7 (b). By considering as a starting position SP 2, the incorporation starting position of a picture signal An aspect ratio becomes possible [displaying the photoed image, the recorded image on the effective viewing area which has the aspect ratio of n:1 (n> 1) to LCD13 of n:n]. In this case, the right-and-left part of LCD13 turns into the part besides a viewing area, i.e., a non-display field.

[0049] B-2. Explain actuation of the 2nd example, next actuation of the compound device by the 2nd example mentioned above. In addition, in the following explanation, since it is the same as that of actuation of the usual PHS terminal or an electronic "still" camera about actuation of each part in a message or photography, explanation is omitted. Here, drawing 8 is a flow chart for explaining the display change actuation at the time of using the compound device by **** 2 example as an electronic "still" camera.

[0050] First, it judges whether it is in camera mode in which it operates as an electronic "still" camera at step S20, and if it is except camera mode (PHS terminal), it will progress to corresponding processing. On the other hand, if it is in camera mode, and it progresses

to step S22, judges whether the mode circuit changing switch 31 was operated and it is not operated, it progresses to other processings. On the other hand, if the mode circuit changing switch 31 is operated, it will progress to step S24 and will judge whether it was supplied to the bottom, or it was supplied to the bottom.

[0051] Here, when it hopes that a user wants to photo an oblong image and the mode circuit changing switch 31 is thrown into the bottom, it progresses to step S26. At step S26, as shown in drawing 7 (a), it changes so that the exposure field of CCD1 may serve as an aspect ratio of 1:n (n>1). Next, at step S28, the incorporation starting position of the picture signal of CCD1 is changed into the starting position SP 1 in an exposure field so that it may illustrate.

[0052] Consequently, the image photoed by CCD1 is in the condition which was oblong and grasped the device concerned, and while seeing from a user and being displayed on LCD13 as an oblong image, it will be recorded on flash memory 8 grade.

[0053] When it hopes on the other hand that a user wants to photo a longwise image according to a photographic subject and the mode circuit changing switch 31 is thrown into the bottom, it progresses to step S30. At step S30, as shown in drawing 7 (b), it changes so that the exposure field of CCD1 may serve as an aspect ratio of n:1 (n>1). Next, at step S32, the incorporation starting position of the picture signal of CCD1 is changed into the starting position SP 2 in an exposure field so that it may illustrate. Consequently, the image photoed by CCD1 is in the condition which was oblong and grasped the device concerned, and while seeing from a user and being displayed on LCD13 as a longwise image, it will be recorded on flash memory 8 grade.

[0054] As mentioned above, both an oblong image and a longwise image can be photoed in the **** 2 example, without rotating the case of a compound machine so that it may illustrate by changing the incorporation starting position of a picture signal according to an exposure part while changing the aspect ratio of the exposure part of CCD1 according to actuation of the mode circuit changing switch 31. Therefore, since it is not necessary to rotate a case, while photography is possible, without dropping a field angle and being able to aim at improvement in the number of effective pixels, blurring can be mitigated and the tint within a visual field can be raised.

[0055] In addition, although an oblong and vertical length were changed in the 2nd example mentioned above by changing the incorporation starting position of a picture signal according to an exposure part while changing the aspect ratio of the exposure part of CCD1, you may make it rotate 90 degrees of image formation to CCD1 using a mirror or prism, without being limited to this.

[0056] C. Explain the 3rd example, next the 3rd example by this invention. In the 3rd example, text, such as a date conventionally added in the photoed image data, is added according to the top and bottom (the vertical direction) of the photoed image. That is, in the **** 3 example, ***** (top and bottom) of a case is detected, and text is added so that the top and bottom (the vertical direction) of the image data photoed may be recognized and it may agree in the direction. Hereafter, it explains to a detail.

[0057] C-1. The block diagram 9 of the 3rd example is a block diagram showing the configuration of the compound machine by the 3rd example of this invention. In addition, ** same into the part corresponding to drawing 1 A number is attached and explanation is omitted. The requirements for a configuration newly added in the **** 3 example are a timer 25 and the ***** sensor 26. A timer 25 counts a predetermined system clock and

clocks current time and a date. This current time and a date are used as text added in image data. For this reason, the character for displaying current time and a date on ROM22 is memorized.

[0058] Moreover, the ***** sensor 26 detects angle of rotation of the compound device concerned, detects [which is an anticipated-use gestalt at least as shown in drawing 10 (a)] whether it is horizontal and is turned to the photographic subject, or as shown in drawing 10 (b), in order to photo a longwise photographic subject, 90 degrees is rotated and it is turned, and supplies the include-angle information equivalent to angle of rotation to CPU21. Here, drawing 10 is the front view showing the example of 1 configuration of the above-mentioned ***** sensor 26. In drawing, the stanchion 27 was used as the supporting point which can rotate an end freely, and equips the other end with weight 28. The end of the above-mentioned stanchion 27 is connected [revolving shaft / of the angle-of-rotation sensor 29]. Corresponding to angle of rotation (grasping include angle) of a compound device, a stanchion 27 rotates so that weight 28 may always be suitable in the gravity direction. Therefore, the revolving shaft of the above-mentioned angle-of-rotation sensor 29 will also rotate according to rotation of a stanchion 27. The angle-of-rotation sensor 29 sends out the output voltage according to angle of rotation of a revolving shaft.

[0059] CPU21 changes a scanning direction, the number of level dots, and the number of perpendicular dots while changing the incorporation starting position of the picture signal of the exposure field in CCD1 according to the include-angle information from the above-mentioned ***** sensor 26. In addition, the detail about this is mentioned later. Moreover, it determines the location which displays text to image data based on the include-angle information from the above-mentioned ***** sensor 26, and CPU21 performs an image processing so that the text which carried out [above-mentioned] creation may be added to this location, while it creates text based on the current time and the date from the above-mentioned timer 25.

[0060] C-2. It hopes that the user of the 3rd example of operation wants to photo an oblong image, and while setting the aspect ratio of the exposure field of CCD1 to 1:n (1>n) when the compound device concerned is grasped in a longitudinal direction as shown in drawing 11 (a), let the incorporation starting position of a picture signal be the starting position SP 3 in an exposure field. Moreover, in this case, a main scanning direction is the direction of a x axis of illustration, and the direction of vertical scanning turns into the direction of the y-axis. Next, while creating text based on the current time and the date from a timer 25 to the timing which displays the image data incorporated from the above CCD 1 on LCD13, based on the include-angle information from the above-mentioned ***** sensor 26, the location in the image data which adds text is determined, and the text which carried out [above-mentioned] creation is added to the location to illustrate. Consequently, text will be displayed on LCD13 in the location and direction corresponding to the top and bottom (the vertical direction) of image data.

[0061] As it hopes on the other hand that a user wants to photo a longwise image according to a photographic subject and is shown in drawing 11 (b), when the compound device concerned is grasped to a lengthwise direction, the aspect ratio of the exposure field of CCD1 remains as it is, and makes the incorporation starting position of a picture signal the starting position SP 4 in an exposure field. Moreover, it considers as the direction of the y-axis of illustration of a main scanning direction in this case, and the

direction of vertical scanning is made into the direction of a x axis. Next, based on the include-angle information from the above-mentioned ***** sensor 26, while creating text based on the current time and the date from a timer 25 to the timing which displays the image data incorporated from the above CCD 1 on LCD13, the text which carried out [above-mentioned] creation is added to this location so that the location in the image data which adds text may be determined and illustrated. Consequently, text will be displayed on LCD13 in the location and direction corresponding to the top and bottom (the vertical direction) of image data.

[0062] Thus, in the 3rd example mentioned above, ***** (angle of rotation of a case) is detected and current time (photography time of day), a date, etc. carry out text addition based on this ***** in the position and a direction which agrees in the universe (the vertical direction) of image data in image data. For this reason, even if it turns a compound device (electronic "still" camera) sideways, and it photos it, and makes it length and takes a photograph, text can be added to the suitable location in image data in a suitable direction. Consequently, a user can check text by looking easily with image data.

[0063] Here, drawing 12 (a) and (b) are the conceptual diagrams showing the image data which added the text by the conventional compound device (or electronic "still" camera), and the image data which added the text by the compound device (or electronic "still" camera) by the 3rd example of above-mentioned this invention. In drawing, each image data makes a device length and photos it, and by the image data based on the conventional technique shown in drawing 12 (a), the location and direction of text do not agree with the direction of image data, and cannot check it by looking easily. On the other hand, in the image data based on the 3rd example shown in drawing 12 (b), since the location and direction of text have agreed with the direction of image data, it can check by looking easily.

[0064] D. Although the angle-of-rotation sensor 29 and the stanchion 27 with which the end was connected [revolving shaft / of this rotation sensor 29], and weight 28 was formed in the other end were used in the 3rd example which is a modification and which was mentioned above in order to detect ***** While forming the conductive stanchion B which considered as the supporting point 30 which can rotate an end freely, and formed weight 31 in the other end as shown, for example in drawing 13 if it detects whether it only turns sideways and a photograph is taken or it is made length and a photograph is taken It separates from this stanchion B suitably, and the conductive terminals A and B are formed in the location which contacts this stanchion B when the conductive stanchion B rotates. Corresponding to angle of rotation (grasping include angle) of a compound device, the above-mentioned stanchion B always rotates so that weight 31 may be suitable in the gravity direction focusing on the supporting point 30.

[0065] Therefore, if Stanchion B has not flowed through which of Terminals A and C according to the above-mentioned configuration If it judged that a compound device (electronic "still" camera) was turned sideways, and was photoed and Stanchion B has flowed with Terminal A It judges that a compound device (electronic "still" camera) is made into length, and is photoed so that Terminal A side may come downward, and further, if Stanchion B has flowed with Terminal C, it can be judged that a compound device (electronic "still" camera) is made into length, and is photoed so that Terminal C side may come downward.

[0066] Therefore, what is necessary is just to add text so that the right may serve as a top at the lower left of a screen, when [which turns a compound device sideways and is photoed so that it may agree in the universe (the vertical direction) of image data, since I hear that a photograph was taken in the condition that a compound device is shown in drawing 14 (a) if Stanchion B has flowed with Terminal A and it is] it usually sees by LCD13 at the time. Moreover, what is necessary is just to add text so that above may become the lower right of LCD13 a top since I hear that a photograph was taken in the state of [usual] the condition that a compound device is shown in drawing 14 (b) and it is, if Stanchion B has not flowed through which of Terminals A and C.

[0067] What is necessary is just to add text so that the left may become the top right of the screen a top when it usually sees by LCD13 at the time so that it may agree in the universe (the vertical direction) of image data since similarly I hear that a photograph was taken in the condition that a compound device is shown in drawing 14 (c) and it is, if Stanchion B has flowed with Terminal C. By this, when a user sees image data in the direction of the right, text will be displayed on the lower right of image data in the direction of the right.

[0068] Furthermore, as a ***** sensor 26 mentioned above, as shown in drawing 15 (a) and (b) Consider as a liquid 36 and the supporting point 37 which can rotate an end freely, and the stanchion 39 which formed the float 38 which becomes the other end from a member with specific gravity lighter than this liquid 36 is enclosed with the predetermined container 35. Furthermore, the angle-of-rotation sensor 41 the revolving shaft 40 was connected [angle of rotation] by the supporting point 38 of this stanchion 39 is formed, it uses rotating a stanchion 39 so that the above-mentioned float 38 may always come up by buoyancy, and it detects in which direction a photograph is taken from the output of the angle-of-rotation sensor 41 (*****).

[0069] And based on this ***** current time (photography time of day), a date, etc. carry out text addition in the position and a direction which agrees in the universe (the vertical direction) of image data in image data. Therefore, even if it turns a compound device (electronic "still" camera) sideways, and it photos it, and makes it length and takes a photograph like the 3rd example mentioned above, text can be displayed in suitable location and direction with image data. Consequently, a user can check text by looking easily with image data.

[0070] [Effect of the Invention] By making the display which has the aspect ratio of about n pair n rotate said viewing area according to the use gestalt of a device according to invention according to claim 1, in case an aspect ratio displays an image on the viewing area of 1:n (n> 1) The advantage that the display direction can be changed easily in all directions is acquired without the scale of a display image changing or some display images going out, since it was made to make the top and bottom of a device, and the top and bottom of a viewing area agree.

[0071] Moreover, if it applies to the display prepared in the compound device which according to invention according to claim 2 has two or more functions and changes a use gestalt according to a use application Since it was made to make the top and bottom of a device, and the top and bottom of a viewing area agree by rotating a viewing area according to the function used and the use gestalt of the device at that time The advantage that the display direction can be changed easily in all directions is acquired without the

scale of a display image changing or some display images going out.

[0072] Moreover, the advantage that the display direction can be changed easily in all directions is acquired, without the scale of a display image changing or some display images going out, since it was made to make the top and bottom of a device, and the top and bottom of a viewing area agree by rotating a viewing area according to the grasping gestalt of a device according to invention according to claim 3.

[0073] Moreover, by making the display which has the aspect ratio of about n pair n rotate said viewing area according to the use gestalt of a device according to invention according to claim 4, in case an aspect ratio displays an image on the viewing area of $1:n$ ($n > 1$) The advantage that the display direction can be changed easily in all directions is acquired without the scale of a display image changing or some display images going out, since it was made to make the top and bottom of a device, and the top and bottom of a viewing area agree.

[0074] Moreover, even if it is the case where the use gestalt of a device when using the use gestalt and the 2nd function of a device when using the 1st function intersects perpendicularly according to invention according to claim 5 Since it was made to make the display direction of said viewing area when using said 1st function, and the display direction of said viewing area when using said 2nd function intersect perpendicularly According to a use gestalt, the advantage that the display direction can be changed easily in all directions is acquired, without the scale of a display image changing or some display images going out.

[0075] Moreover, according to invention according to claim 6, even if the grasping gestalt of the device at the time of use of a photography function is different to the grasping gestalt of the device at the time of use of communication facility, it is at each functional use time. According to a use gestalt, the advantage that the display direction can be changed easily in all directions is acquired, without the scale of a display image changing or some display images going out, since it was made to make the display direction of said viewing area intersect perpendicularly.

[0076] Moreover, since according to invention according to claim 7 an aspect ratio sets up alternatively $1:n$ or the effective viewing area of $n:1$ ($n > 1$) and displayed the image in [of the aspect ratio of about n pair n / which can be displayed] the field at this effective viewing area, even if it does not rotate a body according to the situation of a photographic subject, the advantage that a longwise and oblong image can be displayed is acquired.

[0077] Moreover, since [according to invention according to claim 8] the vertical direction of the image displayed on said effective viewing area is always fixed, even if it does not rotate a body according to the situation of a photographic subject, the advantage that a longwise and oblong image can be displayed is acquired.

[0078] Moreover, since according to invention according to claim 9 it is based on the actuation situation of a handler, the aspect ratio of the effective viewing area in said viewing area is changed and the image was displayed on this effective viewing area, even if it does not rotate a body according to the situation of a photographic subject, the advantage that a longwise and oblong image can be displayed by the easy actuation which changes a handler is acquired.

[0079] Moreover, since the image photoed with the photography means was displayed on the effective viewing area according to invention according to claim 10, even if it does not rotate a body according to the situation of a photographic subject, the advantage that

it can be photoed and displayed that a photographic subject fits in the longwise and oblong framework in the easy actuation which changes a handler is acquired.

[0080] Moreover, since the aspect ratio of an effective viewing area was determined by changing the aspect ratio and picture signal taking-in starting position of an image taking-in field in an image pick-up means according to invention according to claim 11 Even if it does not rotate a body with an easy configuration according to the situation of a photographic subject, while being able to photo a photographic subject by the longwise and oblong framework, the advantage that an image can be displayed is acquired by the easy actuation which changes a handler.

[0081] Moreover, while according to invention according to claim 12 detecting angle of rotation of a case, determining the vertical direction of an effective viewing area based on this angle of rotation and displaying an image based on this vertical direction with an include-angle detection means In the absolute location and the absolute direction over the displayed this image, since text <DP N=0010> was displayed Even if it does not carry out special actuation or a special setup, it makes a body into length and it turns sideways, text can be added automatically and the advantage that visibility can be raised is acquired so that it may agree in the vertical direction of image data.

[0082] Moreover, since the image photoed by the photography means was displayed on the effective viewing area in invention according to claim 13, even if it makes a body into length and it photos a photographic subject, and turns sideways and takes a photograph, text can be added automatically and the advantage that visibility can be raised is acquired so that it may agree in the vertical direction of the photoed image.

[0083] Moreover, since the aspect ratio of an effective viewing area was determined in invention according to claim 14 by changing the aspect ratio and picture signal taking-in starting position of an image taking-in field in an image pick-up means Even if it makes a body into length and it photos a photographic subject with an easy configuration, and turns sideways and takes a photograph, text can be added automatically and the advantage that visibility can be raised is acquired so that it may agree in the vertical direction of the photoed image.

CLAIMS

[Claim(s)]

[Claim 1] The display characterized by having the aspect ratio which an aspect ratio is the display which displays an image on the viewing area of 1:n (n> 1), and is about n pair n by which said viewing area is included, and rotating said viewing area according to a use gestalt.

[Claim 2] Said display is a display according to claim 1 characterized by being prepared in the compound device which has two or more functions and changes a use gestalt according to a use application.

[Claim 3] Said use gestalt is a display according to claim 1 or 2 characterized by being a grasping gestalt by the user of electronic equipment for whom said display was prepared.

[Claim 4] Said display is electronic equipment characterized by having the aspect ratio which is about n pair n by which said viewing area is included in electronic equipment equipped with the display with which an aspect ratio displays an image on the viewing

area of 1:n ($n > 1$), and rotating said viewing area according to the use gestalt of the device concerned.

[Claim 5] Said electronic equipment is electronic equipment according to claim 4 characterized by the display direction of said viewing area when it has the 1st function and 2nd function and said 1st function is used, and the display direction of said viewing area when using said 2nd function intersecting perpendicularly.

[Claim 6] It is electronic equipment according to claim 5 which said 1st function is communication facility and is characterized by said 2nd function being a photography function.

[Claim 7] It has the field of the aspect ratio of about n pair n which can be displayed, and an aspect ratio is 1:n or n:1 in [which can be displayed / this] a field. ($n > 1$) Display characterized by setting up an effective viewing area alternatively and displaying an image on this effective viewing area.

[Claim 8] The vertical direction of the image displayed on said effective viewing area is a display according to claim 7 characterized by the always fixed thing.

[Claim 9] Electronic equipment characterized by providing a display means to have the field of the aspect ratio of about n pair n which can be displayed, the handler into which a use gestalt is inputted, and a display-control means to change the aspect ratio of the effective viewing area in said area within ***** possible based on the actuation situation of said handler.

[Claim 10] Electronic equipment according to claim 9 characterized by displaying the image which was equipped with a photography means to photo a photographic subject, and was photoed by this photography means on said effective viewing area.

[Claim 11] The aspect ratio of said effective viewing area is electronic equipment according to claim 10 characterized by what it opts for by changing the aspect ratio and picture signal taking-in starting position of an image taking-in field in said image pick-up means.

[Claim 12] A display means to display an image on the effective viewing area which has the field of the aspect ratio of about n pair n which can be displayed, and has the aspect ratio of 1:n ($n > 1$) of this field that can be displayed, An include-angle detection means to detect angle of rotation of a case, and a decision means to determine the vertical direction of said effective viewing area based on angle of rotation detected by said include-angle detection means, While displaying an image on said effective viewing area based on the vertical direction determined by text generation means to generate text, and said decision means A display-control means to display the absolute location to the displayed this image, and the text absolutely generated by said text generation means in the direction Electronic equipment characterized by providing.

[Claim 13] Electronic equipment according to claim 12 characterized by displaying the image which was equipped with a photography means to photo a photographic subject, and was photoed by this photography means on said effective viewing area.

[Claim 14] The aspect ratio of said effective viewing area is electronic equipment according to claim 13 characterized by what it opts for by changing the aspect ratio and picture signal taking-in starting position of an image taking-in field in said image pick-up means.